Trend Study 4-17-01

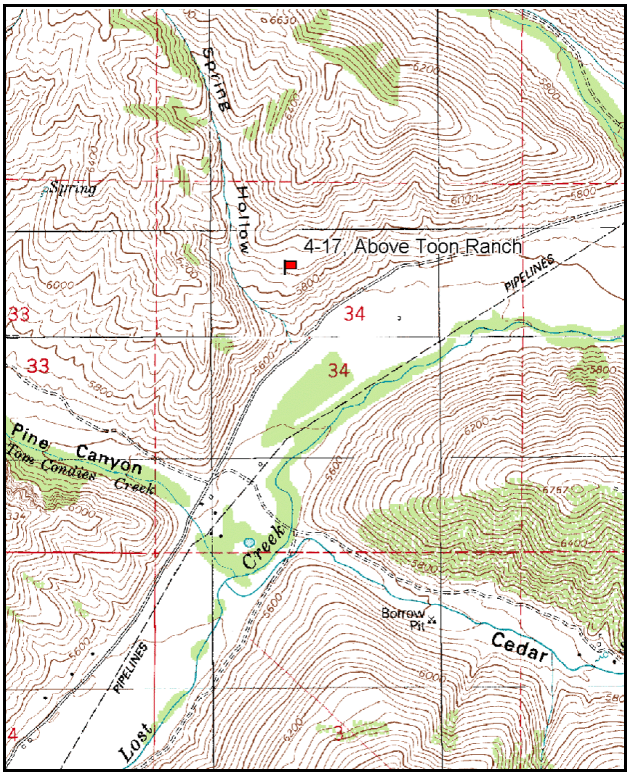
Study site name: Above Toon Ranch . Vegetation type: Big Sagebrush-Grass .

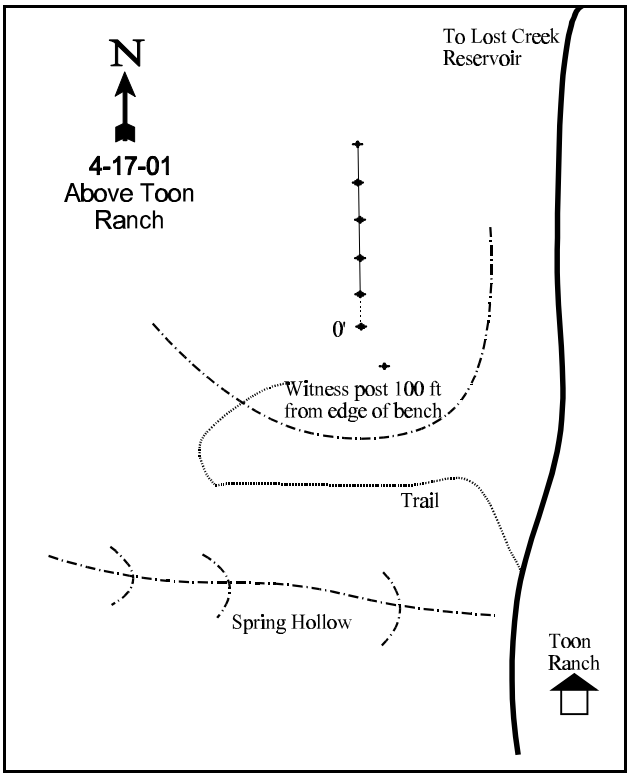
Compass bearing: frequency baseline 6 degrees magnetic.

Frequency belt placement: Line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

LOCATION DESCRIPTION

From Croyden drive up the main road towards Lost Creek Reservoir about 4 miles. Stop at Spring Hollow. Walk up the trail (up Spring Hollow) on the west side of the road until you reach the top of the bench. A witness post will be visible about 100 feet from the edge of the bench. From the witness post walk 100 feet to the north to the 0-foot baseline stake. The baseline runs in a direction of 6 degrees magnetic.





Map Name: Lost Creek Dam

Diagrammatic Sketch

Township 5N , Range 4E , Section 34

UTM 4552803 N 459327 E

DISCUSSION

Trend Study No. 4-17

The Above Toon Ranch study is a new site established in 1996. It samples a gently sloping bench above the Lost Creek Valley which is a natural place for deer to congregate during the winter. The site supports a dense stand of mountain big sagebrush with a mostly cheatgrass understory. Slope on the site is about 19% with a south aspect. Elevation is approximately 6,120 feet. The site is isolated from the road and some of the sagebrush is tall enough to provide some cover. Deer pellet groups were abundant in 1996, with a quadrat frequency of 29%. Some elk and sheep sign was also found that year. A pellet group transect read on the site in 2001, estimated 70 deer days use/acre. One elk pellet group was also encountered. The land owner grazes sheep on the site during the fall and winter but no sheep sign was found in 2001.

The soil is moderately deep with a small amount of rock on the surface and in the profile. A hard clay layer was encountered at about 10 inches, which restricted effective soil depth measurements. As a result, effective rooting depth was estimated at just a little over 11 inches. Soil texture is a loam with a slightly acid soil reaction (pH of 6.5). Parent material appears to be sandstone. There is little bare ground on the site and due to the abundance of cheatgrass, erosion is not a problem. The erosion condition class was determined as stable in 2001.

The site supports a dense stand of mostly mature and vigorous mountain big sagebrush in association with some rabbitbrush. Sagebrush on this site appear to be hybrids of basin big sagebrush (*Artemisia tridentata tridentata*) and mountain big sagebrush (*Artemisia tridentata vaseyana*). Individual plants with more characteristics of mountain big sagebrush are more preferred and invariably are heavily utilized. Density of sagebrush was estimated at nearly 3,000 plants/acre during both sampling periods. Mature plants are large, averaging between 3 and 3½ feet in height. Canopy cover of the sagebrush averaged 28% in 1996, increasing to 33% in 2001. Utilization overall is mostly light. There was a considerable number of dead plants sampled in 1996, but this appears to be natural turnover as percent decadency is low and the stand appears to have reached its maximum density. Seedlings and young appear in numbers adequate to maintain the stand.

Stickyleaf low rabbitbrush is the only other shrub sampled on the site. It has a similar population density as sagebrush, but these shrubs are much smaller and contribute on average less than 10% of the total browse cover. Age class distribution indicates a stable population.

The herbaceous understory is dominated by cheatgrass which accounted for 91% of the total grass cover and 70% of the total herbaceous cover in 1996. It was dense enough to pose a serious fire hazard with an average cover value of 32%. Dry conditions in 2001 have caused cheatgrass to decline significantly in nested frequency with cover dropping from 32% to 12%. It is still abundant however, providing 66% of the total grass cover. Three other species of perennial grass occur on the site with moderate abundance. These include bluebunch wheatgrass, Great Basin wildrye, and Sandberg bluegrass. Forbs are very diverse, yet the only abundant species are western yarrow and American vetch. The majority of the other species encountered are annuals.

1996 APPARENT TREND ASSESSMENT

The soil trend appears stable due to the small amount of unprotected bare ground (1%) and the gentle terrain. The browse trend also appears stable. Use is mostly light and vigor generally good. The dense mountain big sagebrush appears to have reached its maximum density, but some further crown development may still occur. High intensity fall grazing with sheep could benefit the understory by reducing sagebrush cover. The herbaceous understory is depleted. Cheatgrass currently dominates by producing 91% of the total grass cover.

2001 TREND ASSESSMENT

Trend for soil is stable. Protective ground cover declined since 1996, but there is still ample vegetation and litter cover to prevent most erosion. The soil erosion condition class was determined as stable in 2001. Trend for mountain big sagebrush is also stable. Utilization is mostly light, vigor good, and percent decadence moderately low at 21%. The population appears to have reached its maximum density for this site but canopy cover has increased slightly since 1996 (28% to 33%). Seedling and young recruitment appear to be adequate to maintain the stand. Trend for the herbaceous understory is stable for perennial grasses and forbs. However, much like Dry Hollow, annual forbs have increased dramatically. Of the 13 annual forbs sampled on the site, 7 have increased significantly in nested frequency. Cover of annual forbs has increased from 2% in 1996 to 6% in 2001. Perennial forbs still dominate the forb component and produce slightly more cover than annual and perennial grasses combined. The most abundant forbs are weedy increasers which include western yarrow, Pacific aster, and American vetch. The annual, cheatgrass, still dominates the grass component of the herbaceous understory. It has declined significantly in nested frequency, while cover also declined from 32% in 1996 to 12% in 2001. It is still abundant however, with a quadrat frequency of 99%. A return to normal precipitation will reverse this trend for cheatgrass. Taking all of these factors into consideration, trend for the herbaceous understory is stable but in poor condition.

TREND ASSESSMENT
soil - stable (3)
browse - stable (3)
herbaceous understory - stable but poor (3)

HERBACEOUS TRENDS --
Herd unit 04 , Study no: 17

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'96	'01	'96	'01	'96	'01
G	Agropyron spicatum	33	40	16	12	.87	1.79
G	Bromus japonicus (a)	8	3	4	1	.04	.00
G	Bromus tectorum (a)	452	*369	99	99	31.50	11.57
G	Elymus cinereus	5	18	3	6	.82	1.60
G	Poa secunda	68	*114	23	34	1.46	2.60
Total for Annual Grasses		460	372	103	100	31.54	11.58
Total for Perennial Grasses		106	172	42	52	3.15	6.00
Total for Grasses		566	544	145	152	34.70	17.58
F	Achillea millefolium	100	*139	30	39	4.02	6.30
F	Agoseris heterophylla	22	7	13	3	.09	.01
F	Alyssum alyssoides (a)	131	*106	47	38	1.25	.74
F	Allium spp.	12	23	6	11	.03	.16
F	Artemisia ludoviciana	1	6	1	2	.63	.03
F	Aster chilensis	77	63	29	23	.66	.94
F	Castilleja linariaefolia	-	4	-	1	-	.03
F	Camelina microcarpa (a)	68	*24	27	9	.26	.12

Type	Species	Nested Frequency '96	Nested Frequency '01	Quadrat Frequency '96	Quadrat Frequency '01	Average Cover % '96	Average Cover % '01
F	Cirsium undulatum	12	7	6	3	.03	.16
F	Collomia linearis (a)	12	*54	5	21	.02	.26
F	Collinsia parviflora (a)	24	*90	12	29	.06	1.00
F	Cryptantha spp.	14	-	5	-	.07	-
F	Descurainia pinnata (a)	6	2	3	2	.02	.01
F	Draba spp. (a)	18	*55	7	19	.06	.24
F	Galium spp.	5	13	3	4	.01	.09
F	Holosteum umbellatum (a)	61	*195	23	69	.33	2.66
F	Lappula occidentalis (a)	5	7	2	5	.01	.19
F	Lactuca serriola	1	-	1	-	.00	-
F	Machaeranthera spp	4	-	2	-	.01	-
F	Microsteris gracilis (a)	-	*79	-	26	-	.82
F	Polygonum douglasii (a)	9	9	2	3	.01	.01
F	Ranunculus testiculatus (a)	-	5	-	1	-	.03
F	Sisymbrium altissimum (a)	6	6	5	4	.02	.04
F	Tragopogon dubius	-	2	-	1	-	.03
F	Veronica biloba (a)	2	3	1	1	.03	.03
F	Vicia americana	289	*250	93	90	2.44	5.84
Total for Annual Forbs		342	635	134	227	2.09	6.19
Total for Perennial Forbs		537	514	189	177	8.02	13.63
Total for Forbs		879	1149	323	404	10.11	19.82

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 04 , Study no: 17

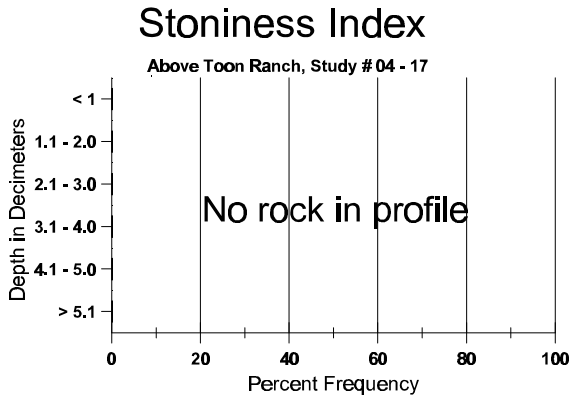
Type	Species	Strip Frequency '96	Strip Frequency '01	Average Cover % '96	Average Cover % '01
B	Artemisia tridentata vaseyana	86	77	27.64	33.43
B	Chrysothamnus viscidiflorus viscidiflorus	69	53	3.37	2.83
Total for Browse		155	130	31.01	36.27

BASIC COVER --
Herd unit 04 , Study no: 17

Cover Type	Nested Frequency		Average Cover %	
	'96	'01	'96	'01
Vegetation	486	466	64.87	66.75
Rock	37	32	.22	.44
Pavement	40	99	.20	.51
Litter	499	488	75.83	57.01
Cryptogams	47	22	.52	.77
Bare Ground	69	129	1.00	6.30

SOIL ANALYSIS DATA --
Herd Unit 04, Study no: 17, Above Toon Ranch

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
11.2	58.4 (12.7)	6.5	41.3	32.7	27.0	3.4	30.9	153.6	.5



PELLET GROUP FREQUENCY --
Herd unit 04 , Study no: 17

Type	Quadrat Frequency		Pellet Transect	
	'96	'01	Pellet Groups per Acre ⁄01	Days Use per Acre (ha) ⁄01
Sheep	3	-	-	-
Rabbit	2	6	217	N/A
Elk	4	-	9	1 (2)
Deer	29	22	914	70 (174)
Cattle	-	3	-	-

BROWSE CHARACTERISTICS --
Herd unit 04 , Study no: 17

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	1	-	-	2	-	-	-	-	-	3	-	-	-	60			3
Y	96	9	1	-	-	-	-	-	-	-	9	-	1	-	200			10
	01	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
M	96	111	8	-	-	-	-	-	-	-	111	-	8	-	2380	34	52	119
	01	80	7	-	9	-	-	1	-	-	97	-	-	-	1940	41	53	97
D	96	15	-	-	-	-	-	-	-	-	10	-	1	4	300			15
	01	25	3	-	-	-	-	-	-	-	23	2	1	2	560			28
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	1040			52
	01	1	-	-	-	-	-	-	-	-	-	-	-	-	360			18

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	06%	00%	10%	- 6%
'01	07%	00%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	2880	Dec:		10%
'01	2700			21%

Chrysothamnus viscidiflorus viscidiflorus																		
S	96	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	96	13	-	-	3	-	-	-	-	-	16	-	-	-	320			16
	01	14	-	-	-	-	-	-	-	-	14	-	-	-	280			14
M	96	111	-	-	35	-	-	-	-	-	146	-	-	-	2920	13	21	146
	01	83	-	-	14	-	-	8	-	-	105	-	-	-	2100	10	14	105
D	96	4	-	-	-	-	-	-	-	-	3	-	-	1	80			4
	01	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
X	96	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'96	00%	00%	.60%	-26%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'96	3320	Dec:		2%
'01	2460			3%